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United States Patent [19]

Tillim et al.

[11] Patent Number: 6,065,408

[45] Date of Patent: May 23, 2000

[54] **SECURITY CASE**

[75] Inventors: **Anthony Frank Tillim; Kevin Edward Moulder**, both of Durban, South Africa

[73] Assignee: **SafeCash Technologies Limited**, South Africa

[21] Appl. No.: **09/149,584**

[22] Filed: **Sep. 8, 1998**

[30] **Foreign Application Priority Data**

Sep. 8, 1997 [ZA] South Africa 97/8043

[51] **Int. Cl.**[7] **E05G 1/00**

[52] **U.S. Cl.** **109/25**; 109/29; 109/38; 109/45; 109/50; 70/63

[58] **Field of Search** 109/25, 29, 20, 109/21, 31, 32, 38, 39, 43–45, 49, 50, 52; 70/63

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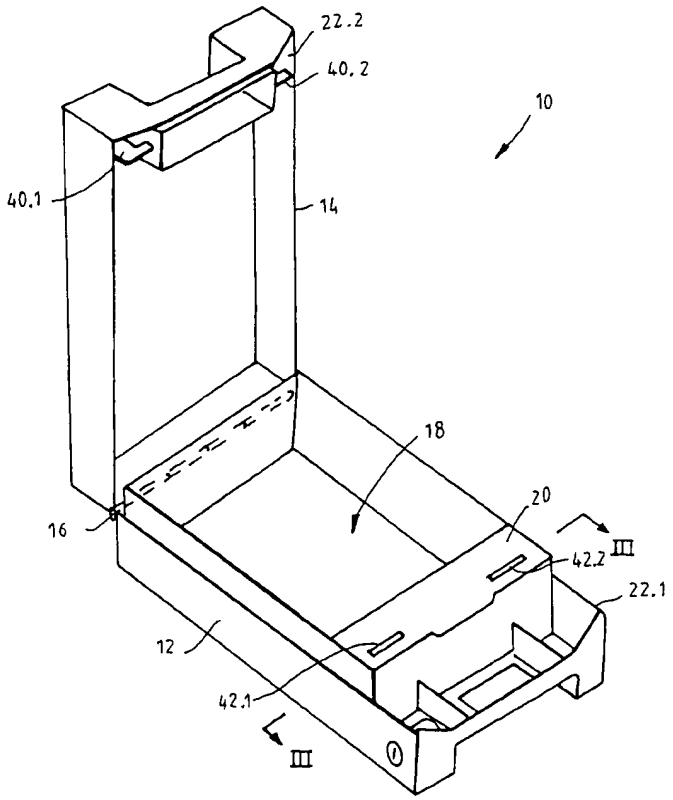
Primary Examiner—Suzanne Barrett

Attorney, Agent, or Firm—Ostrolenk, Faber, Gerb & Soffen, LLP

[57] **ABSTRACT**

A security case includes a body and a lid. The lid is manipulatable between a closed and an open configuration. The case further includes a controller and a configuration sensitive switch connected thereto. An electro-mechanical locking arrangement and an audible indicator are connected to the controller to be controlled thereby. The controller is responsive to the configuration sensitive switch to cause the indicator to provide a first indication while the case is open, and to cause the locking arrangement automatically to lock the case when the case enters the closed configuration.

24 Claims, 6 Drawing Sheets



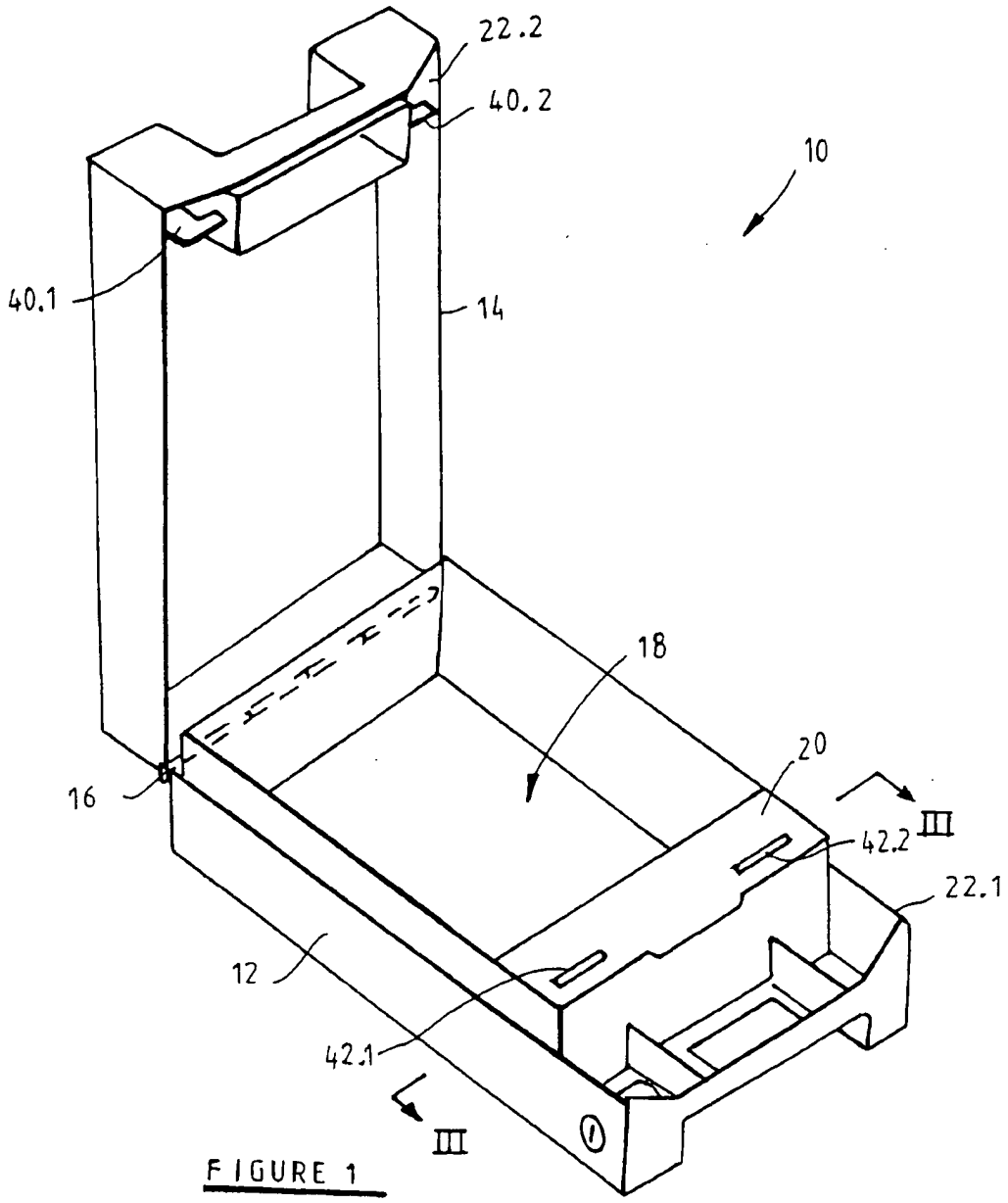


FIGURE 1

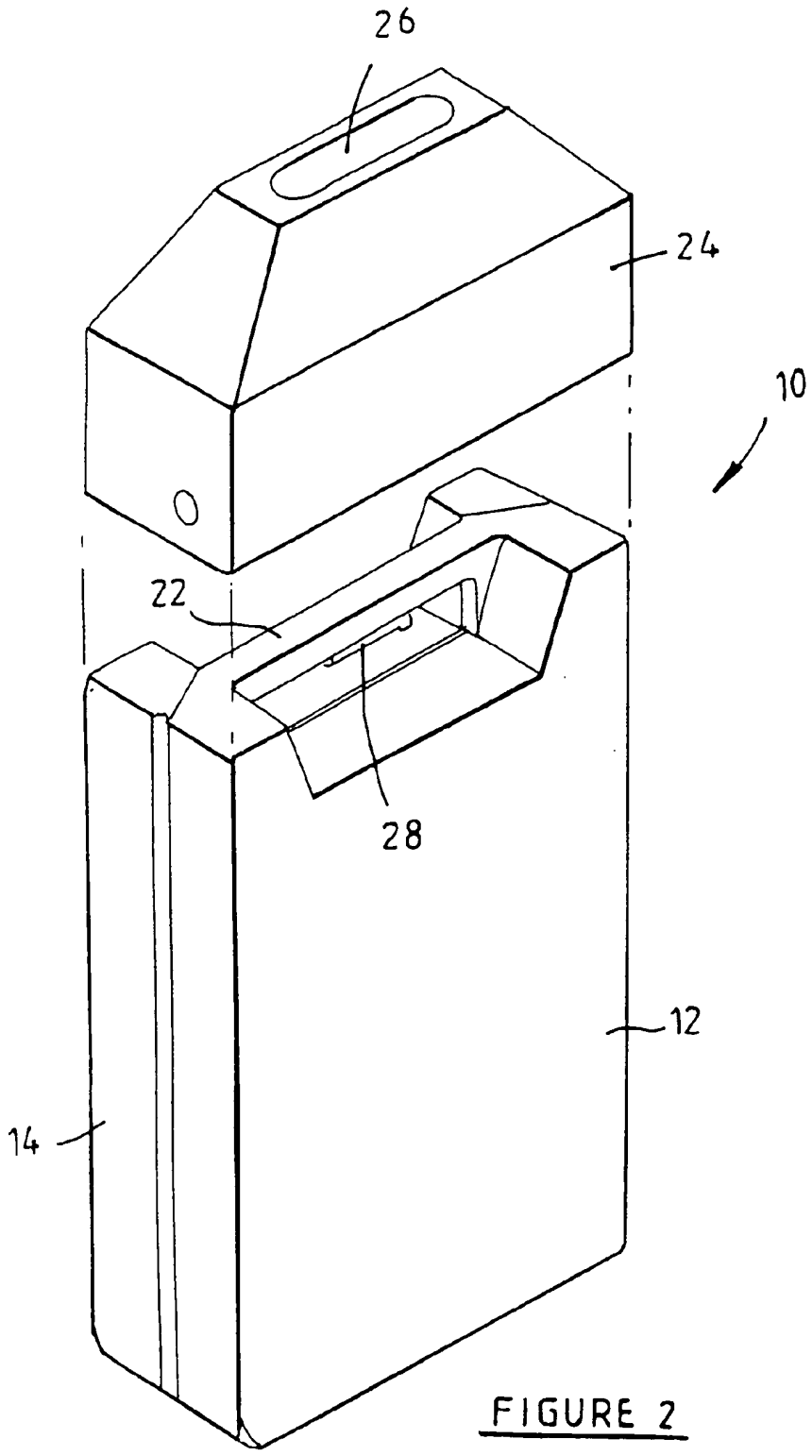


FIGURE 2

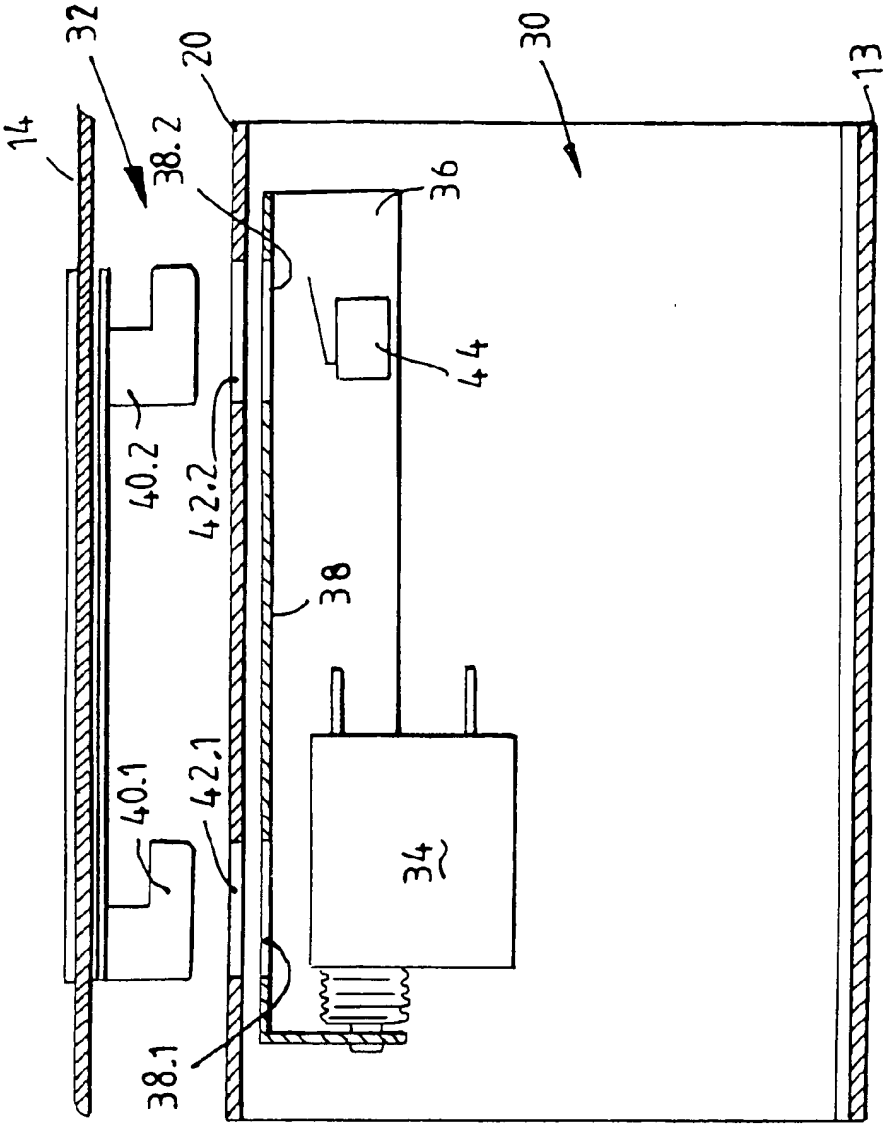


FIGURE 3

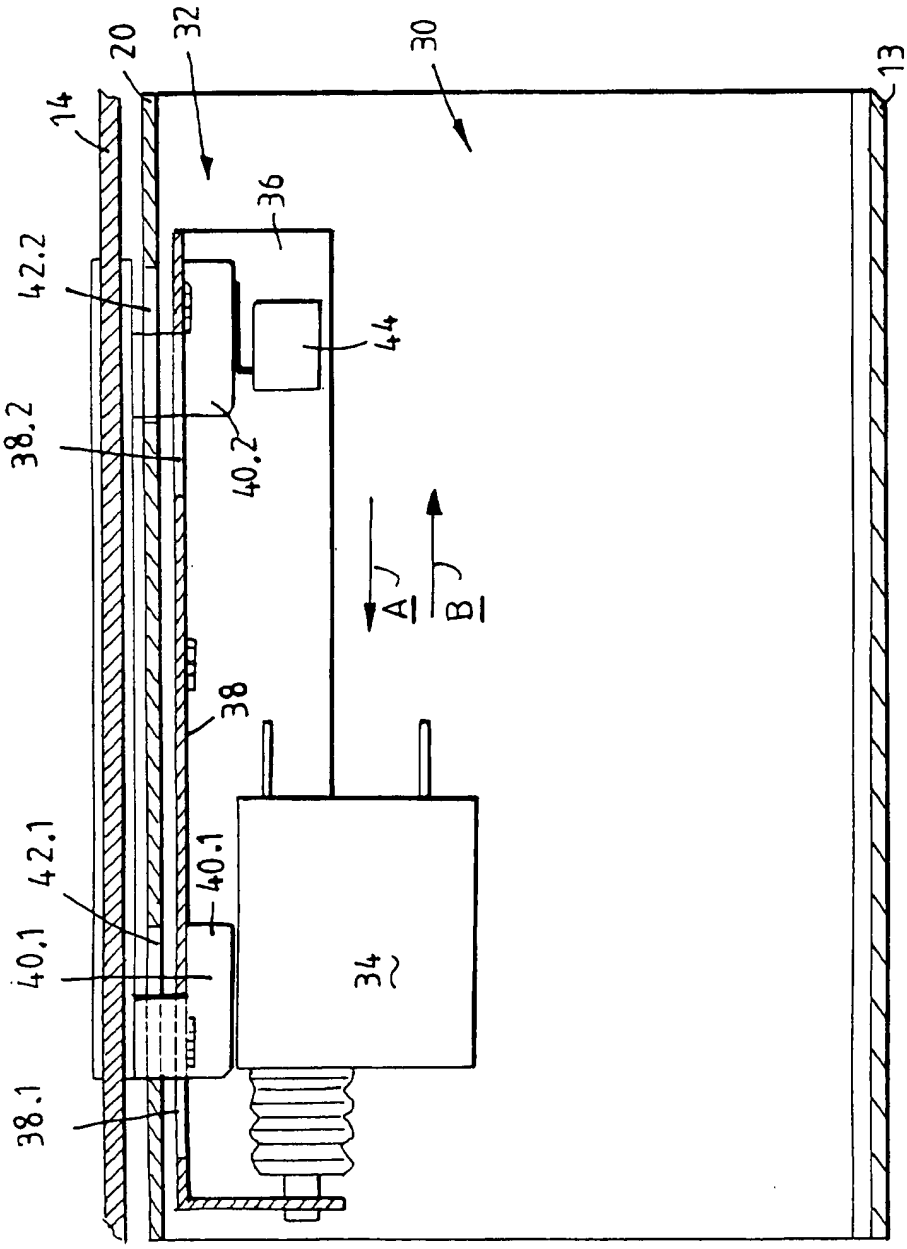


FIGURE 4

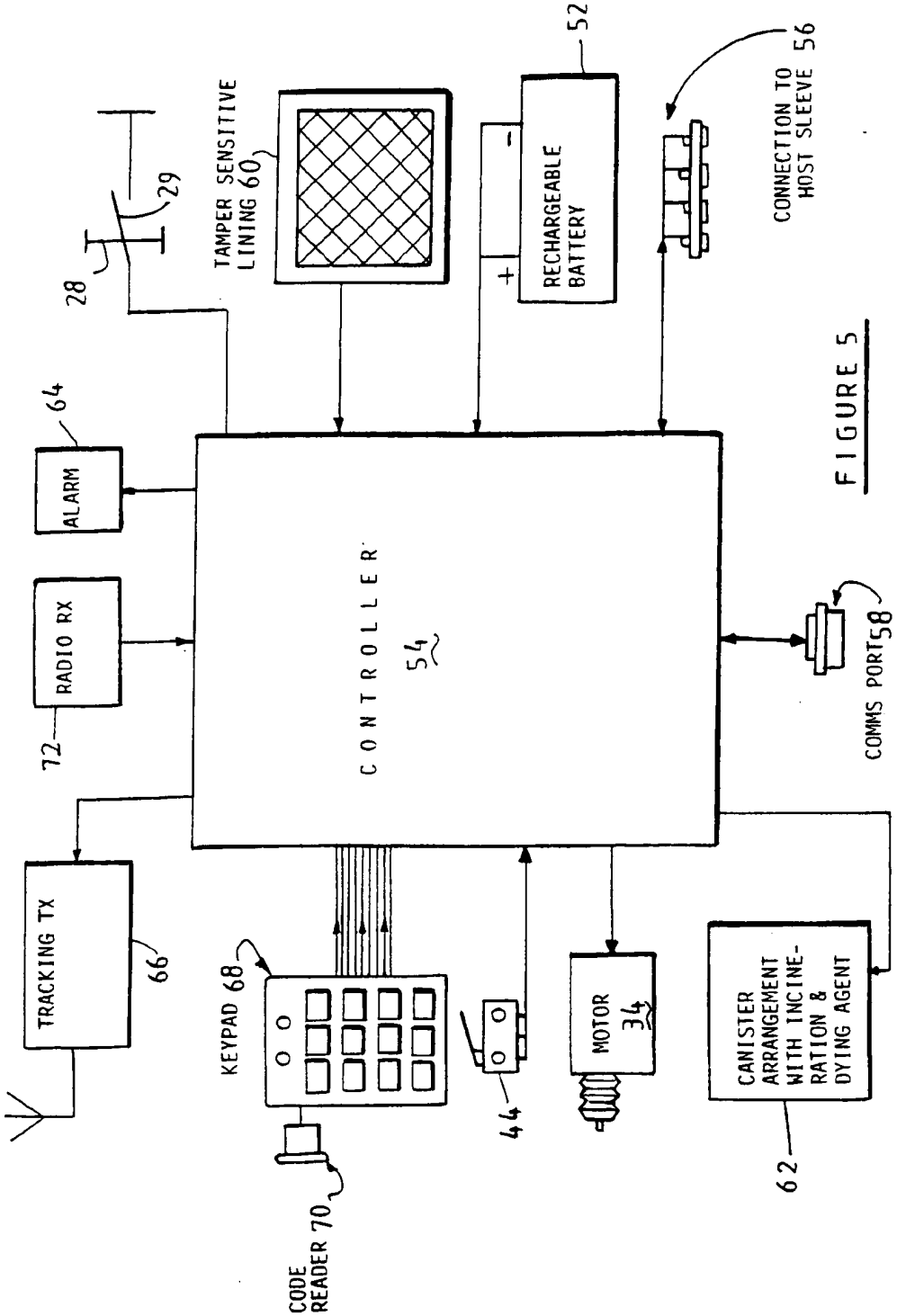

52
CONNECTION TO HOST SLEEVE 56
TAMPER SENSITIVE LINING 60
RECHARGEABLE BATTERY
29
28
64
ALARM
CONTROLLER 54
RADIO RX
72
COMMS PORT 58
TRACKING TX
66
KEYPAD 68
MOTOR 34
CANISTER ARRANGEMENT WITH INCINERATION & DYING AGENT
62
44
CODE READER 70

FIGURE 5

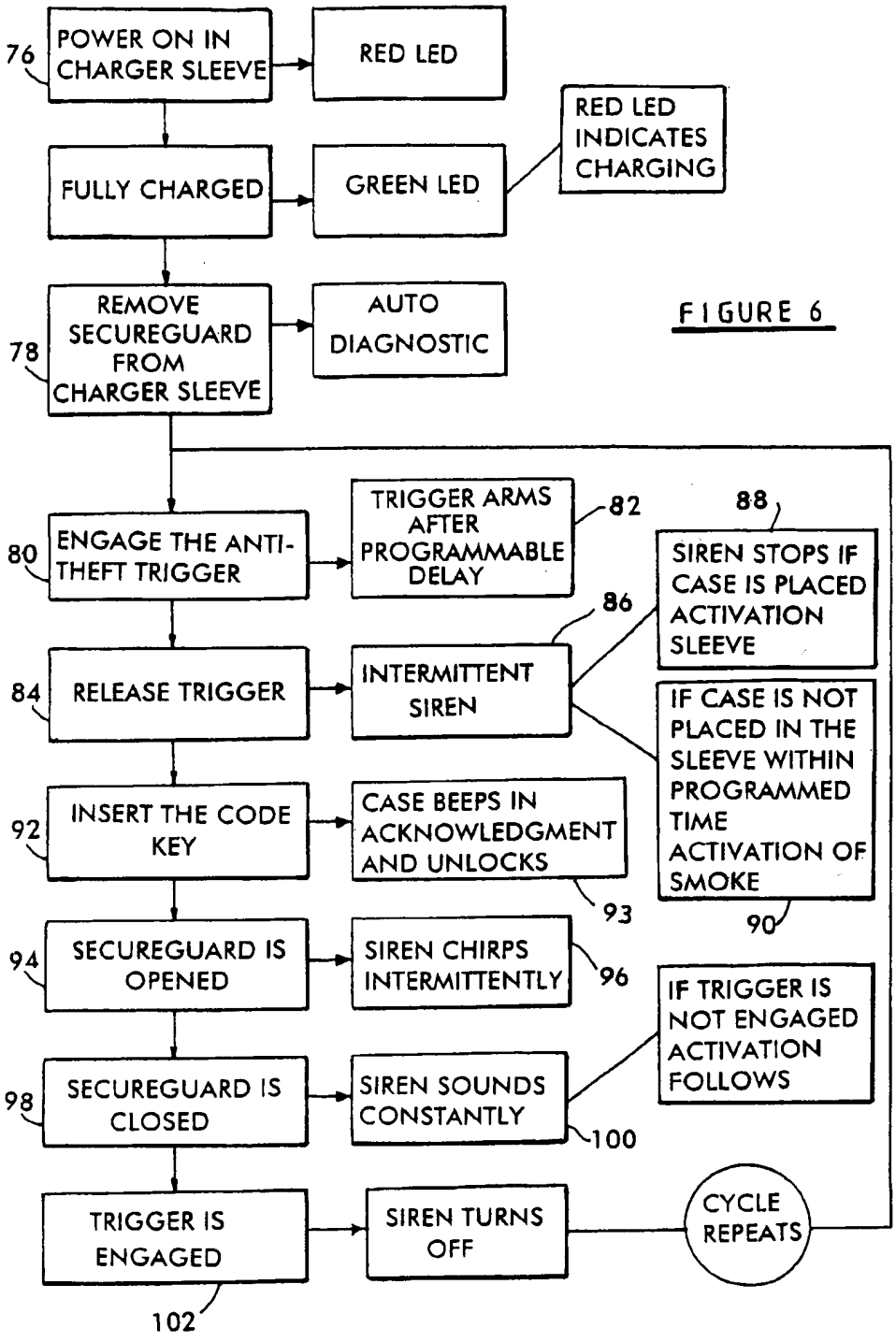

76
POWER ON IN CHARGER SLEEVE
RED LED
RED LED INDICATES CHARGING
FULLY CHARGED
GREEN LED
78
REMOVE SECUREGUARD FROM CHARGER SLEEVE
AUTO DIAGNOSTIC
80
ENGAGE THE ANTI-THEFT TRIGGER
TRIGGER ARMS AFTER PROGRAMMABLE DELAY
82
88
SIREN STOPS IF CASE IS PLACED ACTIVATION SLEEVE
86
84
RELEASE TRIGGER
INTERMITTENT SIREN
IF CASE IS NOT PLACED IN THE SLEEVE WITHIN PROGRAMMED TIME ACTIVATION OF SMOKE
90
92
INSERT THE CODE KEY
CASE BEEPS IN ACKNOWLEDGMENT AND UNLOCKS
93
94
SECUREGUARD IS OPENED
SIREN CHIRPS INTERMITTENTLY
96
IF TRIGGER IS NOT ENGAGED ACTIVATION FOLLOWS
98
SECUREGUARD IS CLOSED
SIREN SOUNDS CONSTANTLY
100
TRIGGER IS ENGAGED
SIREN TURNS OFF
CYCLE REPEATS
102

FIGURE 6

SECURITY CASE

INTRODUCTION AND BACKGROUND

The invention relates to a portable security case and more particularly to such a case for transporting valuables.

The applicant has identified a need for a security case for transporting valuables, such as cash and other valuables over relatively short distances. These short distances are typically "across the pavement" between a security vehicle (for transporting the valuables between a sender thereof and a receiver thereof) and the premises of the sender or the receiver. Although security cases suitable for the aforementioned use are known and available, they all suffer from one or another disadvantage. For example, an underhand bearer of the known cases may upon receipt of the goods in the case deliberately not close the case completely, thereby preventing the built-in protection and tamper sensitive mechanisms of the known cases to be activated or armed. The goods may thus subsequently and before the case reaches the vehicle, be pilfered from the case, without detection thereof by the aforementioned mechanisms.

OBJECT OF THE INVENTION

Accordingly it is an object of the present invention to provide an alternative case with which the applicant believes the aforementioned disadvantages may at feast be alleviated.

SUMMARY OF THE INVENTION

According to the invention there is provided a security case, the case including:

a body;

a lid mounted on the body and which lid is manipulatable between a first position wherein the case is in an open configuration and a second position wherein the case is in a closed configuration;

an electronic controller located in the case;

configuration sensitive means connected to the controller and which means is sensitive to whether the case is in the open or in the closed configuration;

locking means for locking the lid on the body in the closed configuration and which locking means is connected to the controller to be controlled thereby; and

indicator means also connected to the controller to be controlled thereby;

the controller being responsive to one configuration sensitive means to cause the indicator means to provide a first indication while the case is in the open configuration.

The indicator means may include an audible alarm and/or a visible indicator.

The body and lid may be made of a suitable resinous material such as PVC and the lid may be hinged to the body, preferably at one end thereof.

The locking means may include a locking member, preferably a locking plate including a locking formation; and electronic drive means, preferably an electric motor for driving the plate, to cause the locking formation to engage and disengage a cooperating formation on the case, thereby to lock, or unlock the lid from the body.

The case may further include code receiving means connected to the controller for receiving an authorized code and to forward data relating to the code to the controller to cause the locking means to unlock the case and/or to control the indicating means. The code receiving means may for example include any one or more of a keypad; a radio frequency signal receiver; and a reader for a preprogrammed code carrying device or key.

The case may further include tamper sensitive means, preferably in the form of a tamper sensitive lining associated with at least one wall of the body and the lid and connected to the controller, the tamper sensitive means being operative in the event of tampering with the wall, to transmit a signal indicative thereof to the controller.

The case may further comprise a canister arrangement holding an incineration agent and/or a dying agent, the canister arrangement including an electronically operable release mechanism which is connected to be controlled by the controller, to release said agents. The incineration agent, in use, serves to incinerate plastic bags or the like in which banknotes may be stored in the case. The dying agent serves to colour exposed goods.

The case may further include a moisture sensitive dying agent for dying the contents of the case, should the case be submerged in a liquid, such as water.

The case may be associated with a host receptacle or sleeve for removably receiving the case, to reset the controller to a reset mode and to charge a rechargeable battery carried in the case for providing the controller and associated electronic components with electrical power.

The case may also include a handle; and handle engagement sensitive means which is activated when the handle is engaged and which means is connected to the controller to transmit to the controller a first signal when the handle is engaged.

The controller may further include timer means for arming the engagement sensitive means a predetermined time period after the handle has been engaged for the first time to transmit to the controller a second signal, should the handle be released.

The controller is sensitive to said second signal and upon reception thereof is responsive to activate the indicator means to provide a second indication, indicating that the handle has been released. The controller is preferably responsive further to activate said release mechanism of the canister arrangement, if the controller is not reset within a further time period after release of the handle.

The controller may further be responsive to the configuration sensitive means to cause the locking means automatically to lock the case when the case enters the closed configuration.

The controller may yet further be responsive upon reception of said authorized code to cause the locking means to release the lid from the body, so that the case may be opened and to cause the indicator means to provide said first indication as hereinbefore described. The case may now be cleared or loaded while the indicator means indicates, preferably audibly, that the case is still in the open configuration.

The controller may still further be responsive to said configuration sensitive means to cause the indicator means to provide a third indication when the case enters the closed configuration, the third indication serving to indicate that the case has been closed, but that the handle has not yet been engaged. The third indication thus urges a bearer to engage the handle, so that the handle engagement sensitive means may be armed as hereinbefore described. The controller causes said third indication to be terminated upon reception of the first signal from the handle engagement sensitive means.

The case may also include a gauntlet for protecting a handle region of the case.

The invention also extends to a security case system including a case as hereinbefore defined and a host receptacle for removably receiving the case.

BRIEF DESCRIPTION OF THE ACCOMPANYING DIAGRAMS

The invention will now further be described, by way of example only, with reference to the accompanying diagrams wherein:

FIG. **1** is a diagrammatic perspective view of the case according to the invention in an open configuration;

FIG. **2** is a diagrammatic perspective view of the case in a closed configuration also showing a handle engagement sensitive switch mounted on the handle of the case; and a gauntlet for protecting the handle region of the case;

FIG. **3** is a section on line III in FIG. **1**, illustrating an electro-mechanical locking arrangement for locking the lid to the body of the case;

FIG. **4** is a similar section, but with the case in a closed and locked configuration;

FIG. **5** is a block diagram of an electronic controller forming part of the case and various other components connected thereto; and

FIG. **6** is a flow diagram illustrating operation of the controller and the case in use.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

A security case according to the invention is generally designated by the reference numeral **10** in the diagrams.

The generally rectangular case **10** is made of PVC and comprises a body **12** and a lid **14** hinged to the body at **16** at one end thereof. The lid is manipulable between a first position (shown in FIG. **1**) wherein the case is in an open configuration and a second position (shown in FIG. **2**) wherein the case is in a closed configuration. The body **12** defines a region **18** for removably receiving valuables. In the case **10** and towards the other end of body **12** there is provided a closed metal housing **20** defining a chamber **30** housing part of a locking arrangement **32** (shown in FIGS. **3** and **4**). A rechargeable battery designated **52** in FIG. **5**, a controller **54** and other electric components, which will be described in more detail hereafter.

Towards corresponding other ends thereof, each of the body **12** and the lid **14** comprises an integral handle half designated **22.1** and **22.2** respectively and which collectively constitute a handle **22** (shown in FIG. **2**) for the case, when the case is closed. As shown in FIG. **2**, the case further includes a gauntlet **24** defining an opening **26** for receiving a hand and lower arm region (both not shown) of a bearer of the case. In use, gauntlet **24** serves to protect the handle region **22** of the case. In **29** (shown in FIG. **5**), which is connected to the controller **54** to provide to the controller a first signal when the switch button **28** (shown in FIG. **2**) is depressed as a result of the handle being engaged, and a second signal when the handle and button **28** are released.

In FIGS. **3** and **4** there is shown an electro-mechanical locking arrangement **32** for automatically locking the lid **14** to the body **12** when the case enters the closed configuration. Part of the locking arrangement **32** is located in chamber **30** and the other part is mounted on lid **14**. The locking arrangement comprises an electric motor **34** which is connected to the controller **54**, to be controlled thereby. The motor **34** serves selectively to drive an elongate locking plate **36** in reciprocating manner as will herein be described. Plate **36** comprises a perpendicular flange **38** extending parallel to a base **13** of body **12** and defining upwardly facing slots **38.1** and **38.2**. The locking arrangement **32** further includes two foot shaped depending lugs **40.1** and **4.2** mounted on lid **14** and which are also shown in FIG. **1** Slots **42.1** and **42.2** are defined in metal housing **20** for removably receiving the lugs **40.1** an **40.2** respectively. In chamber **30** there is also located configuration sensitive means in the form of a micro-switch **44**. Micro-switch **44** is also connected to controller **54**.

When the lid is in the open position (as shown in FIGS. **1** and **3**) plate **36** is located relative to housing **20** such that slot **38.1** is in register with slot **42.1** in housing **20**; and slot **38.2** is in register with slot **42.2** in housing **20**. With the plate **36** in this position, the lugs **40.1** and **40.2** are receivable in the aforementioned registering slots. When the lid **14** is moved into the closed position and the case thus enters the closed configuration, lug **40.2** extends through registering slots **42.2** and **38.2** and engages micro-switch **44**, as shown in FIG. **4**. A signal is transmitted to controller **54** and the controller causes motor **34** to displace the plate **36** in the direction A (as shown in FIG. **4**) thereby to move slots **38.1** and **38.2** out of register with slots **42.1** and **42.2** respectively, thereby to engage foot formations **40.1** and **40.2**, as shown in FIG. **4** and to lock the lid **14** onto the body **12**.

A functional block diagram of the controller **54** associated with various input devices and devices controlled thereby is shown in FIG. **5**. Controller **54** including a timer (not shown) is connected to the aforementioned electric motor **34**, micro-switch **44** and rechargeable battery **52**. Also connected to the controller **54** are a connector **56** for connecting the controller to an electric circuit, including a battery recharge circuit, of a host sleeve (not shown), a communications port **58** and a tamper sensitive lining **60** for the case. Should the case be broken into by breaking any of the walls of the body or the lid, the lining will be ruptured. The lining is arranged and connected to transmit an appropriate signal to the controller **54**. Further connected to be controlled by the controller is an electronic release valve (not shown) of a canister **62** located in the case and which canister holds an incineration agent and/or a dying agent. The incineration agent when released, serves to incinerate plastic bags or the like wherein banknotes may be stored in the case, and the dying agent serves to dye the resulting exposed contents of the case. Indicator means in the form of an audible alarm **64** mounted on the case **10** is also connected to be controlled by the controller **54**—as is an optional case tracking transmitter **66**. Code receiver means in the form of a keypad **68**, a reader **70** for a preprogrammed code carry key (not shown) and a radio signal receiver **72** are also connected to the controller, to transmit a code received, to the controller.

In FIG. **6**, there is shown a flow diagram illustrating operation of the case, in use.

At **76**, the case **10** is shown) located in a host sleeve (not shown and which typically is located in a vehicle (also not shown) for transporting valuables from a sender to a receiver thereof), so that the battery **52** in the case may be recharged and the controller **54** be reset. When the case is removed from the sleeve at **78**, a self-diagnostic test is performed by the controller **54** on the mechanisms of the care.

To remove the case as aforesaid, the bearer inserts his hand through opening **26** in the gauntlet **24** and grips the handle **22** as indicated at **80**. At the same time switch button **28** is depressed, causing the aforementioned first signal to be transmitted to the controller **54**. A first time period after first engagement of the button **28** as determined by the aforementioned timer, an anti-theft mechanism of the case is armed, as illustrated in **82**. Should the button **28** be released after this first time period, for example at **84**, alarm **64** is caused at **86** to provide to a third of a plurality of audible

indications. The indication may be stopped by immediately relocating the case in the host sleeve as shown at **88**. However, if the case is not so reinserted within a predetermined time period after the button has been released, it may be a theft situation and the controller **54** accordingly causes the valve of canister **62** to release the incineration and dying agents, as illustrated at **90**.

To unlock the case **10**, an authorised code needs to be entered into controller **54** via any one of keypad **68**, code reader **70** and radio signal receiver **72**. This is illustrated at **92** in FIG. **6**. The unlocking operation shown at **93** includes causing the motor **34** to move plate **36** in direction B shown in FIG **4**, until it is in the position shown in FIG. **33**. The lugs **40.1** and **40.2** are hence released, so that the lid may be lifted. As the case is opened at **94**, the controller causes the alarm **64** to provide a first of the plurality of audible indications as shown at **96**, to indicate that the case is open and not yet closed. This will enable a sender of valuables to verify that the bearer closes the case properly, after it has been loaded with valuables, so that the security and anti-theft mechanisms of the case are property armed and initiated as herein described.

When the case is closed us indicated at **98**, the controller **54** causes the alarm **64** to provide a second of the plurality of indications, as indicated at **100**. This indication urges the bearer to engage the handle and button **28** as shown at **102**, which in turn causes the controller **54** to turn the alarm **64** off. The operation now loops back to block **80** and the procedure is repeated, as will be clear from FIG. **6**.

It will be appreciated that there are many variations in detail on the security case according to the invention, without departing from the scope and spirit of the appended claims.

What is claimed is:

1. A security case comprising:

a body;

a lid mounted on the body and the lid is manipulatable between a first position wherein the case is in an open configuration and a second position wherein the case is in a closed configuration;

an electronic controller located in the case;

configuration sensitive means connected to the controller and the configuration sensitive means is sensitive to whether the case is in the open or in the closed configuration;

locking means for locking the lid on the body in the closed configuration and the locking means is connected to the controller to be controlled thereby; and

indicator means also connected to the controller to be controlled thereby;

the controller being responsive to the configuration sensitive means to cause the indicator means to provide a first indication while the case is in the open configuration;

a handle; and

handle engagement sensitive means connected to the controller, the handle engagement sensitive means being arranged on the case to be actuated when the handle of the case is engaged to transmit a first signal to the controller.

2. A security case as claimed in claim **1** wherein the indicator means includes at least one of an audible alarm and a visible indicator.

3. A security case as claimed in claim **1** wherein the body and lid are made of a resinous material and wherein the lid is hinged at one end thereof to the body.

4. A case as claimed in claim **1** wherein the locking means is located in the body and includes a locking member including a locking formation;

case further including electric drive means for driving the member to cause the locking formation to engage and disengage a cooperating formation on the lid, to thereby lock and unlock the lid from the body.

5. A case as claimed in claim **1** further comprising code receiving means connected to the controller, the code receiving means being operative to receive an authorized code and to forward data relating to the code to the controller to cause the locking means to unlock the lid from the body.

6. A case as claimed in claim **1** wherein at least one wall of the body and lid is associated with tamper sensitive means connected to the controller, the tamper sensitive means being operative in the event of tampering with the wall, to transmit a signal indicative thereof to the controller.

7. A case as claimed in claim **1** further comprising a canister arrangement holding at least one of an incineration agent and a dying agent, the canister arrangement including an electronically operable release mechanism which is connected to be operated by the controller, to release at least one of said agents.

8. A case as claimed in claim **1** wherein the controller includes a timer to cause the engagement sensitive means to be armed a predetermined time period after the handle has been engaged for a first time, and to transmit a second signal to the controller, when the handle is released.

9. A case as claimed in claim **8** wherein the controller is sensitive to the second signal and upon reception thereof is responsive to activate the indicator means to provide a second indication, indicating that the handle has been released.

10. A case as claimed in claim **9** wherein the controller is responsive to activate a release mechanism of a canister arrangement including at least one of an incineration agent and a dying agent, if the controller has not been reset within a further predetermined time period after the handle has been released.

11. A case as claimed in claim **1** wherein the controller is responsive to the configuration sensitive means to cause the locking means to automatically lock the case when the case enters the closed configuration.

12. A case as claimed in claim **11** wherein the controller is further responsive to the configuration sensitive means to cause the indicator means to provide a third indication wherein the case enters the closed configuration, the controller causes the indicator to provide the third indication until the handle engagement sensitive means has been actuated.

13. A case as claimed in claim **1** further comprising a gauntlet defining an opening for protecting the handle of the case.

14. A security case system comprising:

a case as claimed in claim **1**;

a host receptacle for removably receiving the case, the receptacle including a controller for resetting the controller of the case; and

battery charging circuitry to recharge a rechargeable battery onboard the case.

15. A case as claimed in claim **1** wherein:

the controller includes a timer which is operative to cause the handle engagement sensitive means to be armed a predetermined period of time after the handle has been engaged for a first time; and

the handle engagement sensitive means is operative to transmit a second signal to the controller when the handle is released.

16. A case as claimed in claim **8** wherein the controller is sensitive to the second signal and upon reception thereof is responsive to activate the indicator means to provide a second indication indicating that the handle has been released.

17. A case as claimed in claim **8** wherein the controller is further responsive to activate a release mechanism of a canister arrangement including at least one of an incineration agent and a dying agent, when the controller has not been reset within a further predetermined time period after the handle has been released.

18. A case as claimed in claim **1** wherein the controller is responsive to the configuration sensitive means to cause the locking means to automatically lock the case when the case enters the closed configuration.

19. A case as claimed in claim **18** wherein the controller is responsive to the configuration sensitive means to cause the indicator means to provide a third indication when the case enters the closed configuration until the handle engagement sensitive means has been actuated.

20. A security case comprising:

a body;

a lid mounted on the body and the lid is manipulatable between a first position wherein the case is in an open configuration and a second position wherein the case is in a closed configuration;

an electronic controller located in the case;

a configuration sensitive switch, connected to the controller, the switch is sensitive to whether the case is in the open or in the closed configuration;

a lock for locking the lid on the body in the closed configuration, the lock is connected to the controller to be controlled thereby;

an indicator also connected to the controller to be controlled thereby;

the controller being responsive to the configuration sensitive switch to cause the indicator to provide a first indication while the case is in the open configuration;

a handle on the case; and

a handle engagement sensitive switch connected to the controller, the handle engagement sensitive switch being arranged on the case to be actuated when the handle of the case is engaged to transmit a first signal to the controller.

21. A case as claimed in claim **20** wherein the controller includes a timer to cause the engagement sensitive means to be armed a predetermined time period after the handle has been engaged for a first time, and to transmit a second signal to the controller, should the handle be released.

22. A case as claimed in claim **21** wherein the controller is sensitive to the second signal and upon reception thereof is responsive to activate the indicator means to provide a second indication, indicating that the handle has been released.

23. A case as claimed in claim **22** wherein the controller is responsive to activate a release mechanism of a canister arrangement including at least one of an incineration agent and a dying agent, if the controller has not been reset within a further predetermined time period after the handle has been released.

24. A case as claimed in claim **20** further comprising a gauntlet defining an opening for protecting the handle of the case.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO : 6,065,408

DATED : May 23, 2000

INVENTOR(S) : Anthony Frank Tillim and Kevin Edward Moulder

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below.

Please correct the name of the Assignee as follows:

On the cover sheet of the patent, [73] Assignee, should read:

--SafeCash Technologies (Proprietary) Limited--

Signed and Sealed this

Third Day of April, 2001

Attest:

NICHOLAS P. GODICI

Attesting Officer

Acting Director of the United States Patent and Trademark Office